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CHICAGO PUBLIC MERCHANDISE WAREHOUSES IN DISTRIBUTION

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By
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E. E. FEREBEE

THE USE OF PUBLIC MERCHANDISE WAREHOUSES IN CHICAGO

E. E. FEREBEE¹

THE concentration of manufacture within the metropolis and the radiation of goods throughout the surrounding area involve the co-operation of many specialized agencies. These agencies are organized into a system by means of buying and selling. Not the least important of these agencies is the public merchandise warehouse.² The discussion which follows aims at giving information on the use of public merchandise warehouses in Chicago. Factors affecting the distributor in his decision to use the warehouse are also discussed.

The information for this article is furnished by data collected on inbound and outbound shipments to and from four of Chicago's most prominent public merchandise warehousing companies for the first month of each quarter of the year 1926. These data are available on approximately 36,000 shipments, exceeding 65,000 tons in weight, going to and coming from any one of 1,500 counties scattered throughout the nation. Commodities involved in the shipments have been classified into 31 different groups, the attempt being to classify them in accordance with homogeneity. The data obtained also include point of origin and destination, class of consignor and consignee, kind of merchandise, and weight.

Table I gives the rank according to weight of the different commodities coming into and going out of four Chicago public merchandise warehouses during the months of January, April, July, and October, 1926.

¹ This is part of a doctoral dissertation written by Mr. Ferebee while at the School of Business of the University of Chicago.

² The U.S. Bureau of the Census reports an average of 1,152 public merchandise warehouses for the year 1928, these reporting total available space of 53,037,000 sq. ft. Merchandise arrivals at these warehouses during the year totaled 7,823,698 tons, 75.5 per cent of which was stored at least to some extent. The remainder did not go into storage at all but was aided in the distributive processes by public merchandise warehouses.

PUBLIC MERCHANDISE WAREHOUSES IN CHICAGO 319

USERS OF THE PUBLIC MERCHANDISE WAREHOUSE

The distribution of certain commodities, such as goods of a seasonal nature, involves the broker to a considerable extent.

TABLE I

INBOUND AND OUTBOUND COMMODITIES OF FOUR CHICAGO PUBLIC
MERCHANDISE WAREHOUSES (BY RANK OF COMMODITY)

(January, April, July, and October, 1926)

COMMODITY	INBOUND		OUTBOUND	
	Weight in Tons		Weight in Tons	
	Rank	Weight	Rank	Weight
Canned goods.....	1	8,226.3	1	7,201.5
Syrup and molasses.....	2	5,392.42	6	1,589.0
Dried fruits and vegetables.....	3	3,300.8	2	2,078.9
Cereals and grains.....	4	3,160.8	4	1,709.7
Confectioneries.....	5	2,967.1	12	1,135.3
Soap and cleaning fluid.....	6	2,509.3	8	1,547.3
Alcohol, beverages, etc.....	7	2,063.2	3	1,800.5
Metals and metal products.....	8	1,955.7	5	1,598.2
Autos and machinery.....	9	1,897.4	9	1,438.0
Oils and fats.....	10	1,623.7	15	704.2
Paper and paper products.....	11	1,159.1	11	1,142.1
Drugs and proprietary medicine.....	12	1,047.2	7	1,142.1
Building supplies.....	13	772.85	10	1,391.1
Bakery products.....	14	756.5	21	319.0
Dry goods and clothing.....	15	602.0	17	524.7
Chemicals and chemical products.....	16	518.52	14	753.5
Cosmetics, perfume, etc.....	17	483.18	20	353.9
Furniture and fixtures.....	18	470.4	19	365.9
Glue and gelatine products.....	19	282.1	25	175.3
China and glass products.....	20	245.2	13	1,032.6
Paints and varnishes.....	21	219.8	22	253.5
Tea, coffee, cocoa.....	22	197.9	26	72.6
Starches and dextrins.....	23	138.3	30	2.1
Rubber and rubber products.....	24	126.98	18	456.9
Musical instruments.....	25	123.3	23	203.5
Flour and mill products.....	26	85.6	24	184.2
Wood and its products.....	27	29.3	29	9.4
Tobacco and its products.....	28	8.4	27	66.0
Leather and leather products.....	29	1.58	28	42.5
Unclassified.....		764.4		646.8
Total.....		41,120.33		30,437.3

Distribution of other commodities has for a long time involved the jobber. Still others, such as many lines of producers' goods, are

normally distributed directly. Therefore in order to reach valid conclusions as to the significance of the public merchandise warehouse in distribution, it is necessary to analyze the users of the warehouse by types of commodities. A detailed analysis has been made in Table II of all commodities as a whole and of four specific classes of commodities. These four classes are selected because of the great volume of them passing through the warehouse.

The shipment of all commodities from the warehouses during the four months of 1926 totaled 30,473.3 tons, just 10,683 tons less than the inbound shipments for the same period. This variance between inbound and outbound figures may be attributed largely to the seasonality factor and the stocks on hand. The four-month sample period used obviously does not give sufficient weight to the heavy production months of a large number of commodities. The largest volume of goods flowing from the warehouses, 12,204 tons, or 40.1 per cent of the total volume, went to the manufacturer. Of merchandise entering the warehouses from all sources 76.8 per cent came from manufacturers. Thus, slightly more than one-half of all goods sent to public merchandise warehouses by manufacturers was distributed directly, whereas slightly less than one-half of such goods was distributed indirectly through middlemen. Over one-third of the total outbound commodities, 37.4 per cent, went into the hands of the wholesaler. The wholesaler was responsible for only 4.8 per cent of the total merchandise going into the warehouses. Thus it may be concluded that approximately seven-eighths of the goods received by the wholesaler through the public merchandise warehouse originated from other distributors than himself.

The retailer received 20.8 per cent of the total merchandise moving from the warehouses during the period. He was the consignor of 10.1 per cent of all commodities flowing into the public merchandise warehouse. Thus, slightly less than one-half of the merchandise received by him through this distributive agency originated from sources other than himself.

Similar analyses may be made of the figures on the selected commodities covered in Table II. However, the present purpose is to discuss what types of commodities are best adapted to warehouse distribution.

TABLE II
ALL COMMODITIES, AND SELECTED CLASSES OF COMMODITIES PASSING THROUGH FOUR
CHICAGO PUBLIC MERCHANDISE WAREHOUSES
(January, April, July, and October, 1926)

Class of Consignor	All Mdse.; Wt. in Tons	Per Cent of Total	Canned Goods; Wt. in Tons	Per Cent of Total	Metal Prod.; Wt. in Tons	Per Cent of Total	Conf'y; Wt. in Tons	Per Cent of Total	Dry Goods; Wt. in Tons	Per Cent of Total
Inbound—by Class of Consignor										
Manufacturer...	31,599.08	76.2	2,982.6	36.3	1,955.7	100.0	2,934.3	98.9	304.9	50.6
Jobber.....	1,925.10	4.8	1,203.5	14.4	.....	.....	32.6	1.1	297.1	49.4
Broker.....	3,177.90	7.7	1,662.5	20.3	.....	.....	.....	.....	.....	.....
Retailer.....	4,418.25	10.7	2,377.7	28.9	.....	.....	.....	.....	.....	.....
Total.....	41,120.33	100.0	8,226.3	100.0	1,955.7	100.0	2,967.1	100.0	602.0	100.0
Outbound—by Class of Consignee										
Manufacturer...	12,204.0	40.1	1,131.6	15.8	1,001.9	62.7	733.8	64.7	350.7	66.8
Jobber.....	11,394.9	37.4	4,646.3	64.5	261.9	16.4	209.0	18.3	31.1	9.8
Broker.....	325.7	1.7	180.9	2.5	3.9	0.2	5.6	0.6	6.4	1.2
Retailer.....	6,512.7	20.8	1,242.7	17.2	330.5	20.7	186.9	16.4	116.5	22.2
Total.....	30,437.3	100.0	7,201.5	100.0	1,598.2	100.0	1,135.3	100.0	524.7	100.0

The adaptability of commodities for public merchandise warehouse distribution depends upon physical characteristics of the commodity, the choice of trade channels by the distributor, seasonality of production and consumption, and transportation.

TABLE III*

PHYSICAL SUITABILITY OF COMMODITIES FOR PUBLIC
MERCHANDISE WAREHOUSE DISTRIBUTION

	Canned Meats		Metal Products	Confec- tionery	Dry Goods
Dusty.....	—	—	—	—	—
Hazardous for insurance.....	—	—	—	—	—
Malodorous.....	—	—	—	—	—
Excess care, temperature.....	—	—	—	—	—
Excess value.....	—	—	—	—	—
Fragility, package or contents....	—	—	—	—	—
Access to owner.....	—	—	—	—	—
Mussy.....	—	—	—	—	—
Isolation.....	—	—	—	—	—
Attractive to vermin.....	—	—	+	+	+
Excess care, leakage.....	—	—	—	—	—
Liability to cause damage.....	—	—	—	—	—
Excess care, humidity.....	—	—	+	+	—
Susceptible to claims.....	—	—	+	+	—
General perishability.....	—	—	+	+	—
	15	15—	15—	11—	14—
	100%		100%	73.3%	93.3%

* In the table, if the factor militating against the use of the public merchandise warehouse is present in the commodity, it is so designated by a plus mark (+); if such factor is absent, it is so designated by a minus mark (—). An average of the minus marks reveals the extent to which the commodity has physical characteristics making for public merchandise warehouse distribution.

PHYSICAL CHARACTERISTICS

Table III, by classifying commodities in accordance with elements of special risk to the warehouse, attempts to formulate an index for determining the physical suitability of selected commodities for public merchandise warehouse distribution. The American Warehousemen's Association has endeavored through committee investigation to classify these elements of special risk.³

³ *Warehousing Encyclopedia* (American Warehousemen's Association, 1924). Here the warehouse index of rates refers to the appropriate "standard modifications" for each commodity, so that, as goods are received by the warehouse, there is brought to attention the special liability of the item.

The Association has named these elements "standard modifications." These standard modifications have been used as a basis for Table III.

THE CHOICE OF TRADE CHANNEL

There are found passing through the public merchandise warehouse commodities which use the indirect channel of distribution as well as the direct trade channel. There seems to be no direct correlation between either the direct trade channel and the use of the public merchandise warehouse or the indirect channel and the use of the public merchandise warehouse. Canned goods, a commodity which exceeds all others in the volume entering and leaving the warehouses during the period, favors the indirect route in passing from the producer to the consumer. Metal products, which rank eighth in volume of merchandise entering the warehouse and ninth in outgoing volume, were, for the greater part, distributed directly to either manufacturer, users, or retailers. Because of this lack of correlation between the choice of trade channel and the use of the public merchandise warehouse, there is need for some analysis of the separate factors affecting the manufacturer's choice of trade channels. The more important conclusions revealed by an analysis of such factors are as follows:

1. The need for financing, often prevalent when the manufacturer is operating on a small scale, in many instances causes the use of the public merchandise warehouse. This is particularly true of staples such as canned goods. The market for canned goods is quite definite within certain limits. When the canner meets the conditions which are prescribed for storing, commercial paper, accompanied by warehouse receipts, is eligible for rediscount with Federal Reserve Banks. A warehouse receipt, when lawfully issued, constitutes collateral ranking among the highest classes. So important has become the warehouse receipt that custodian warehousing is being practiced merely as a means of issuing warehouse receipts to be used as collateral in securing loans.
2. Keen competition, when it closes the established trade channel of an industry to newcomers, often forces new manufacturers to use the warehouses as distributive agencies. As a means of combatting competition through quicker delivery, the public merchandise warehouse is resorted to.
3. The hand-to-mouth buying tendency and the resulting demands for quick delivery on the part of both retailers and wholesalers has made it neces-

sary for the manufacturer to establish spot stocks at various strategic points.

4. The trend toward different types of wholesalers, from large general wholesalers to smaller specialty jobbers, cash and carry jobbers, and wagon jobbers, is increasing the importance of the public merchandise warehouse in distribution. Manufacturers must make spot stocks available in order to furnish quick and efficient service.
5. In the distribution of commodities which, due to their nature, are not the most susceptible to public merchandise warehouse distribution, savings in transportation costs may more than offset the added cost of using this type of distributive agency.

SEASONALITY IN PRODUCTION AND CONSUMPTION

Early storage in warehouses was made necessary largely as a result of seasonal production and consumption. At an earlier date storage was confined almost entirely to local areas. The primary function of the warehouse was the creation of time utilities. The warehouse still continues to perform that function. A radio manufacturer, for example, stores his sets in May, June, and July, which are the months of low current demand for radios in order that he may meet the peak demand of November, December, and January. A higher price can often be had by holding than by dumping on the market in the summer. A value has thus been created by storage, not because goods have been made available in a different form or at a different location, but rather because they have been made available at a different time. The need for financing is closely correlated with seasonality in production and consumption. The producer of a commodity with seasonal sales, such as the radio, would experience many unjustifiable expenses should he push the production of the commodity only when the demand called for it. If this manufacturer evens out his production during the months of weak demand, storing his surplus for the period of peak demand, he is avoiding the burden of carrying idle capital. Goods in storage represent invested capital, and as long as they remain in storage without being used as collateral for loans this invested capital is idle.

TRANSPORTATION

The present structure of transportation rates enables the public merchandise warehouse to perform an essential function for the

shippers of merchandise.⁴ In a large number of instances the spread between carload and less-than-carload rates is great enough to cover all warehousing costs, thereby giving the shipper the benefit of warehousing services without any additional cost as compared with that of shipping directly to the purchaser in less than carload lots. Quite frequently commodities taking the first-class rate in less-than-carload quantities come under the third-class rate when shipped in carload lots. It is also true that commodities which take a second-class less-than-carload rate often take the fifth-class carload rate. Thus, goods may be shipped in carlots to a warehouse at a central distributing-point under the carlot rate. The warehouse may then be used as a breaking-center, dividing these carload shipments into less than carload shipments and forwarding them, over shorter distances under the less-than-carload rate or by means of trucks. The combined carload and less-than-carload rates in many cases are much less than the straight less-than-carload rate from the point of origin. A concrete example is furnished by a candy manufacturer located in New York City, distributing his products to various points in the Chicago area.

When a shipper wishes to economize in transportation charges by distributing through a central market around which he wishes to distribute his product, and yet does not have sufficient demand for his product in that territory to justify shipments in carloads, he has several other alternatives from which to choose. He may join with several other shippers of commodities taking the same classification to "consolidate freight" into a pool car. Rates on pool cars are considerably lower than less-than-carload rates. Another alternative is the consolidating of freight by means of container-car service. Container-car service enables shippers to have goods transported at somewhat lower than less-than-carload rates, and at the same time provides for flexibility as to the size of shipments and their destinations.

⁴ The forwarding of merchandise received in carload lots and the breaking-up of carlot shipments into less-than-carlot shipments can of course be performed by other agencies than the public merchandise warehouse. However, the warehouse provides facilities for combining storage with distribution. The modern warehouse is well fitted for pool-car distribution. It has facilities for unloading, assorting, reloading, checking, marking, tagging, drayage, and packing.

Both long- and short-haul trucking are of increasing significance to the public merchandise warehouse. A number of motor transportation companies operate out of Chicago to points in Illinois, Indiana, Michigan, Wisconsin, and Iowa. Twenty-four-hour service is furnished for goods consigned to these points. Pick-up and delivery service is furnished. Motor-freight transportation rates compare favorably on short hauls with rail rates.

TABLE IV
THROUGH RATES* FROM FACTORY, AND TOTAL COMBINED RATES
VIA CHICAGO TO POINTS IN THE CHICAGO AREA
(Rates in Dollars per Cwt.)

From New York To	L.C.L. Through Rate from Factory	L.C.L. Rate from Chicago	Total Rate via Chicago—94½ Cents from Factory to Chicago plus L.C.L. Rate Beyond	Savings by Shipping to Chicago in Carlots
Cedar Rapids, Iowa.....	\$1.64	\$0.64	\$1.58½	\$0.05½
Madison, Wis.....	1.68	.51	1.45½	.22½
Lansing, Mich.....	1.13½	.67	1.61½	— .48
Green Bay, Wis.....	1.57½	.65	1.49½	.06
Fort Dodge, Iowa.....	1.91	.79	1.73½	.17½
Des Moines, Iowa.....	1.82	0.73	1.67½	0.04½

* Rates as of 1927.

The pool-car method of distribution through public merchandise warehouses approximates fast-freight and package-car service in speed. It is often said that such expedition is possible only for the maximum portion of the haul, and that when these carlot shipments are distributed through trap cars by the public merchandise warehouse more than enough time is lost, through delay, to offset the savings in freight rates. Such is certainly not true in the large terminal markets of the country. Chicago, for example, has more than three thousand package cars leaving daily. These cars are routed to every town in the United States large enough to have a post-office. Each day about two thousand points in the forty-eight states are reached, there being a transfer point in each state to more than sixty thousand other points. In package-car

service Chicago has one-day delivery service to Dubuque, Iowa, and Evansville, Indiana; two days to Detroit, Michigan; Pittsburgh, Pennsylvania; and Buffalo, New York: three days to Kansas City, Missouri, and Montgomery, Alabama; four days to New York, New Orleans, and Oklahoma City; five days to Boston and Denver; nine days to Los Angeles and San Francisco; and exceptionally good time to other points.

Another economic advantage derived through the use of the public merchandise warehouse as an auxiliary to transportation service is the decreased damage risk. Aside from provision by the warehouse of experts in handling commodities, it is a known fact that carload shipments, being handled less frequently, are less liable to damage, pilferage, and exposure to the elements.

Thus, when there is a sufficient spread between carlot and less-than-carlot rates compared with storage costs, when time is the essence of successful competition, and when the merchandise involved is particularly susceptible to damage in transit, the economies of using the merchandise warehouse as an auxiliary to transportation are apparent.

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THE USE OF PUBLIC MERCHANDISING WARE- HOUSES—IN CHICAGO—*Continued*

E. E. FEREBEE

THE purpose here is to present a graphic portrayal of the supply and distribution areas of Chicago public merchandise warehouses. The primary basis for the study is information on inbound and outbound shipments to and from four of the largest public merchandise warehouses in Chicago.¹ Maps have been constructed in order that the information may be presented in concrete form. On these maps distinction has been made between carload and less-than-carload lots. The plotting has been done by counties, the maps being laid off in mileage zones. The respective zone limits from Chicago are as follows: 300 miles, 550 miles, 750 miles, 1,000 miles, 1,350 miles, 1,550 miles, 1,750 miles, and 2,100 miles.

Figures 1-4 indicate the supply and distribution areas for all commodities received and distributed by the warehouses for the first month of each quarter of the year 1926. The inadequacy of the use of political units such as counties, cities, or states for delineating market areas is illustrated by these maps. The inadequacy of circles for outlining a true market area is also demonstrated. Figure 1 when compared with Figure 2 reveals that the great preponderance of outbound shipments from Chicago warehouses are of the less-than-carlot variety. Of the total merchandise leaving Chicago warehouses for cities, 19,953 carloads, only 102 were carlot shipments. Of the total merchandise leaving for country points, 6,713 carloads, only 85 were carlot shipments.

Figures 3 and 4 show an opposite tendency on the part of inbound shipments. Here there is a proportionately larger number

¹ The data include inbound and outbound shipments of commodities for January, April, July, and October, 1926. The information covers approximately 36,000 shipments going to or coming from any one of 1,500 counties scattered throughout the nation. The total volume of goods on which information is available exceeds 65,000 tons. Commodities are classified into thirty different groups (see *Journal of Business* [October, 1933], p. 319).

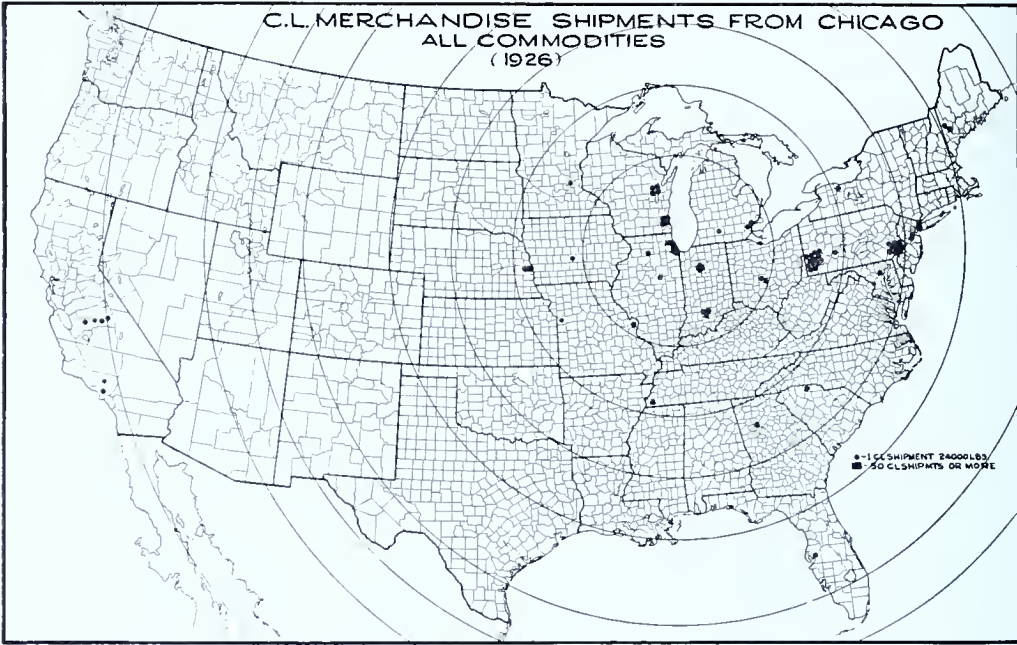


FIG. 1

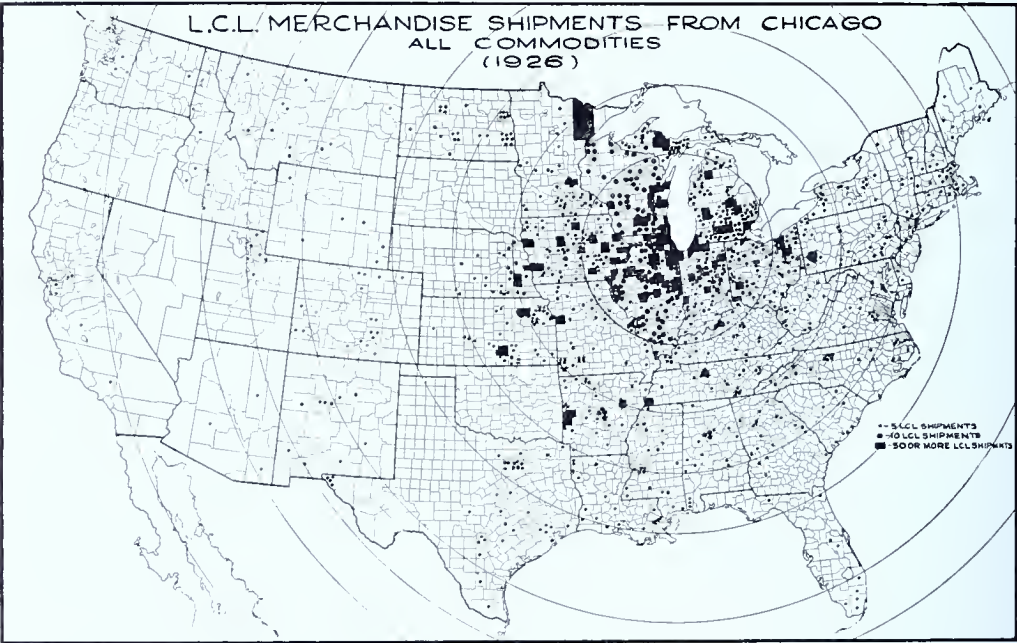


FIG. 2

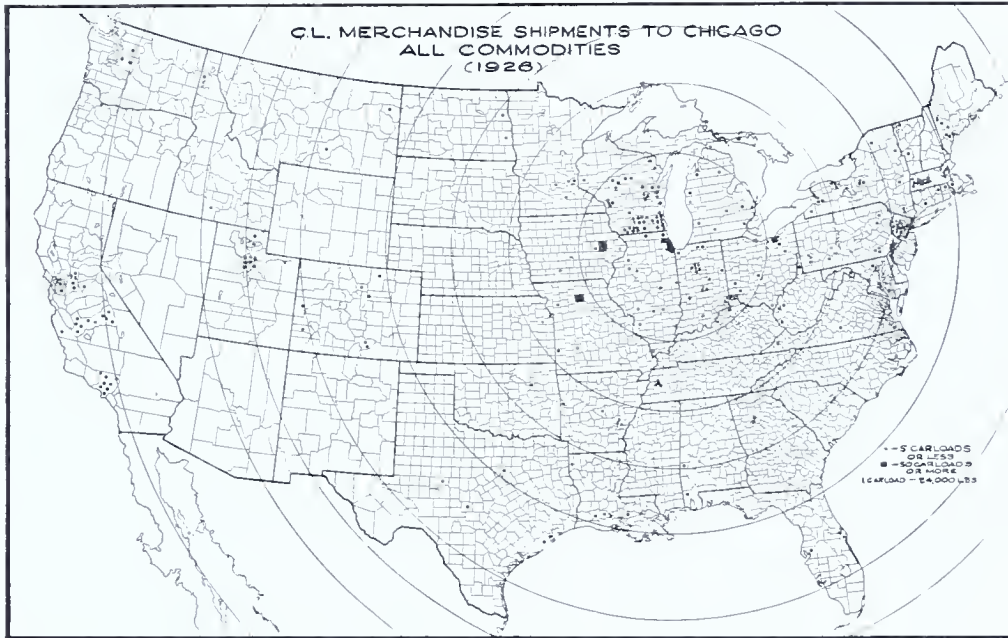


FIG. 3

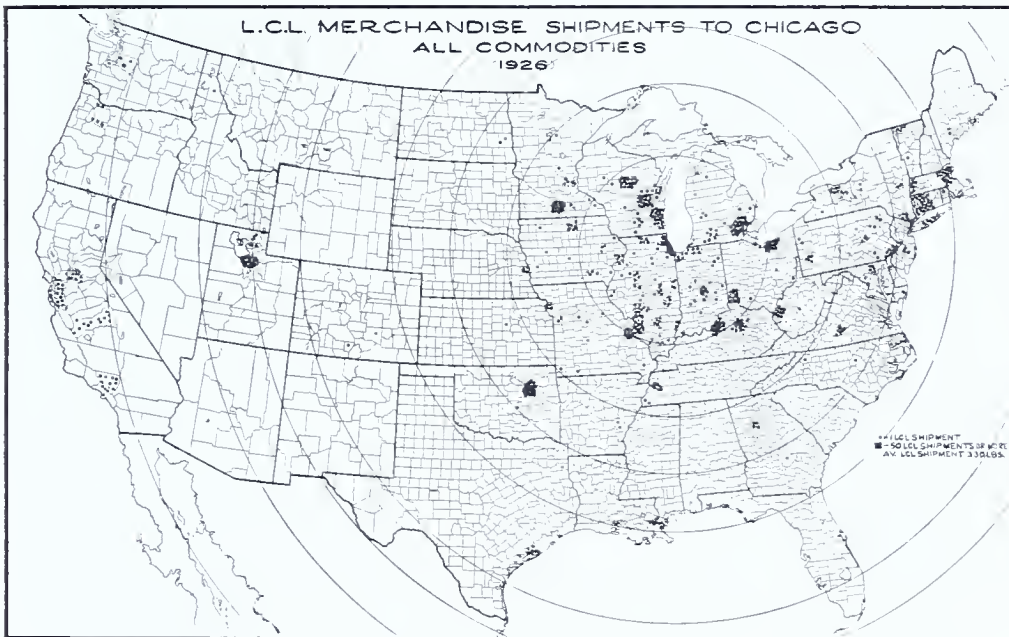


FIG. 4

of inbound shipments of the carlot variety. Of the inbound shipments from cities, 1,029 out of a total of 2,601 carloads were carlot shipments. Out of the 895 carloads inbound from country points, 531 were carlot shipments. These facts are indicative of the service warehouses are rendering through pool-car distribution. Taken as a whole, the amount of merchandise in and out of these warehouses is a movement principally between large cities.

It will be noted from Figure 1 that the heaviest concentration of outbound less-than-carload merchandise shipments occurs within a radius of 750 miles from Chicago. There is also evidenced by Figure 2 a tendency toward heavy concentration of outbound carlot shipments within this area. This is not surprising, for many large concerns use Chicago as one of various distributing points. On the other hand, there are some companies distributing their entire output through Chicago, the goods being consigned to public merchandise warehouses within the city and then shipped to secondary points. A wise choice of distribution centers requires, among other things, a comparison of average freight savings through various distributing centers.

Figures 3 and 4 indicate the areas from which goods are concentrated into Chicago. The concentration is heaviest from within the first two mileage zones, within a radius of 550 miles of Chicago. Chicago also concentrates considerable merchandise from the East and Far West beyond the 550-mile zone. In view of the imports and heavy manufacturing of the East, and the canned goods industry of the Far West, this is what would normally be expected.

The supply area for canned goods moving to Chicago public merchandise warehouses is represented by Figure 5. Figures 6 and 7 outline the distribution areas. The Middle West and Pacific Coast states are the main sources of supply for canned goods. Chicago's proximity to important production areas, its transportation tie-up, its location on a line of through traffic, and the local consumption of Chicago are factors of paramount importance in the determination of the supply and distribution areas of its warehouses. In 1927 the value of product in the canning and pre-

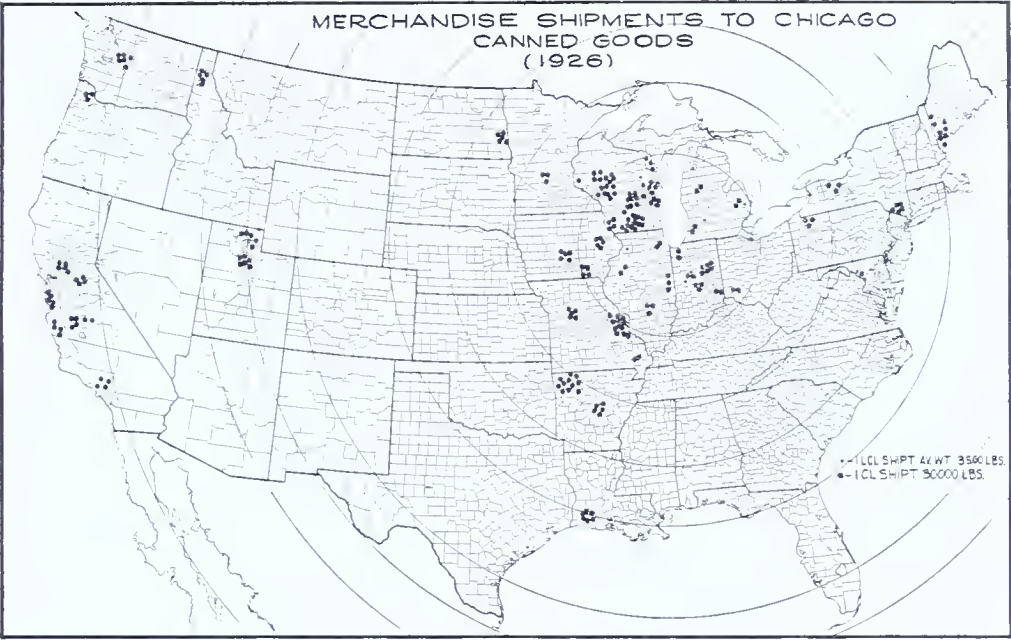


FIG. 5

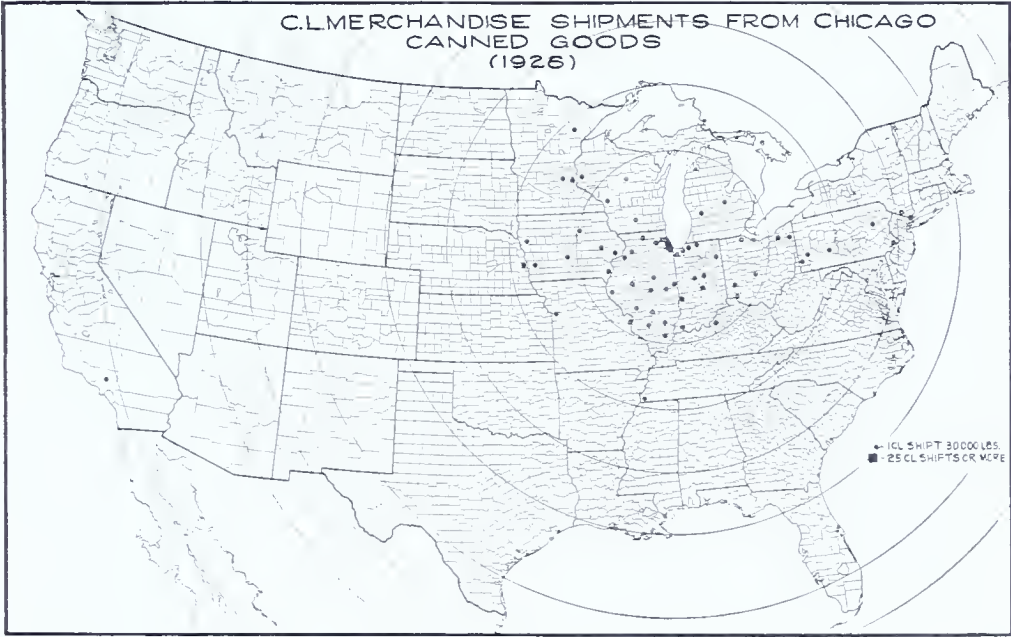


FIG. 6

serving industry for the country as a whole was \$637,428,049.² There was produced in the six states of Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin 17.9 per cent of this total, \$114,711,668 in value of product. The population in these six states, 27,861,738,³ comprises 22.7 per cent of the total population of the United States. The canned goods produced in this area combined with those produced in the three Pacific Coast states, \$207,462,538, and the four eastern states of New York, New Jersey, Pennsylvania, and Maryland, \$180,045,962, account for 78.9 per cent of the total national production of the industry.

The canning industry in the Far West concentrates largely on fruits, whereas in the Middle West and East vegetable canning plays a more important part. Chicago, the railroad center of the nation, with its unparalleled transportation facilities, is situated on a line of through traffic between the east and west coasts. When storage in transit is advisable, Chicago occupies a very advantageous position. Again Chicago plays a very important part in the dispersion of canned goods over its own area, whether they are goods produced within or without the area. There is a wide spread between carload and less-than-carload freight rates on canned goods.⁴ The margin of profit on canned goods is not large, and many distributors of this type of product use Chicago as a rate-breaking point in the dispersion of their commodities over the Middle West.

Figures 6 and 7 indicate that the distribution areas receiving the heaviest shipments from Chicago lie within the various mileage zones, within a radius of 750 miles from the city. In the case of less-than-carload shipments there appears a heavier westward movement beyond the 750-mile zone than is true of carload shipments. This may be attributed largely to the concentration of

² *U.S. Census on Manufactures* (Bureau of the Census, 1930).

³ *Ibid.*

⁴ For average savings in freight rates from distributing canned goods eastward from the Pacific Coast through Chicago, see Don F. Harner, traffic manager for Stewart Curtis Packers, Inc., in his article, "Chicago as a Distributing Center," *Materials Handling and Distribution*, September, 1930. The article is one of a series dealing with distribution waste. Chicago is discussed as a distribution center for the central and northern portions of the United States.

vegetable canning in the Middle West and to the fact that many small canners are not able to utilize a number of central distributing points.

Figures 8 and 9 illustrate the concentration and dispersion of confectionery and confectionery supplies by Chicago warehouses. Confectionery and confectionery supplies, as the term is used here, applies to candies of various kinds, chocolate coating, cocoa, and certain other commodities essential to the manufacture of candy. A glance at Figure 8⁵ reveals that concentration is from highly centralized areas. Although the pool-car method of distribution is not used extensively for the distribution of candies, it is used considerably for the distribution of confectionery supplies. Figure 9 shows the dispersion of confectionery and confectionery supplies to be confined mostly to the territory within a 750-mile radius of Chicago. The majority of the outbound shipments are of the less-than-carload variety. What few carload shipments there were went to other candy manufacturing or distributing centers, practically all of such merchandise having originated in Chicago.

Figure 10, which shows the concentration of metal and metal products, indicates that the most important sources for this type of product are Chicago and the south-central and northeastern portions of the United States. The heavy concentration from the state of Tennessee is attributable to the shipments of an aluminum plant at Alcoa, Tennessee. The concentration area in Oklahoma is largely the result of metal jar-top shipments to Chicago by a manufacturer of glass jars in that state. This latter company's entire output is distributed through Chicago, being shipped thereto in carload lots and stored in public merchandise warehouses. Some of the product returns as far west as the point from which it originated when dispersed toward the consumer. Concentration from the East is the result of imports from abroad, receipts from eastern hardware manufacturing companies, and from reduction plants of the Aluminum Company of America. Figure 11 shows the wide dispersion of metal products from Chi-

⁵ The dots on the map around Chicago refer to supplies originating within Cook County and the city of Chicago.

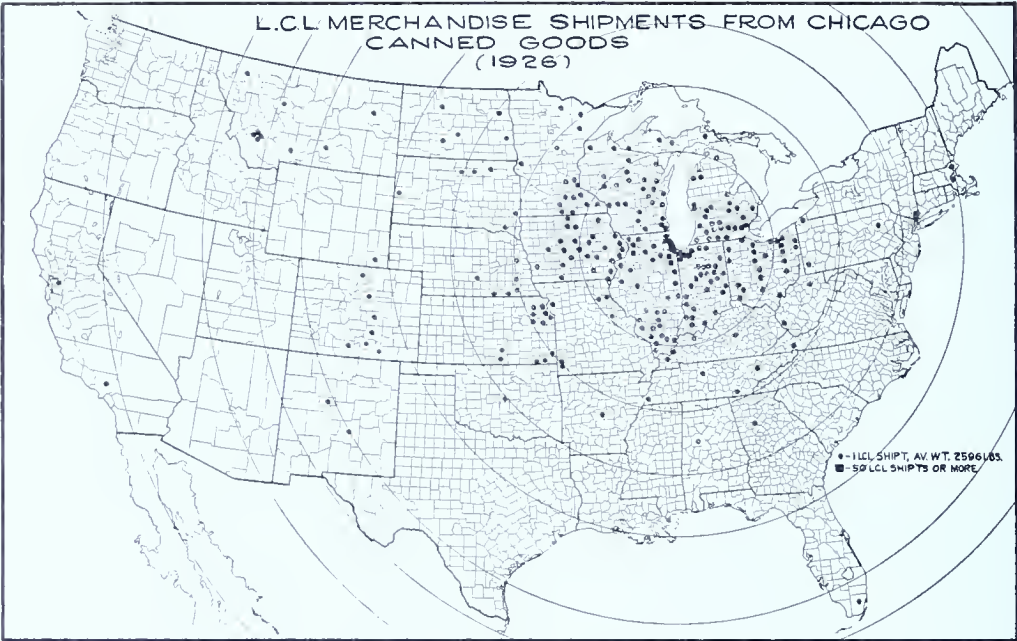


FIG 7

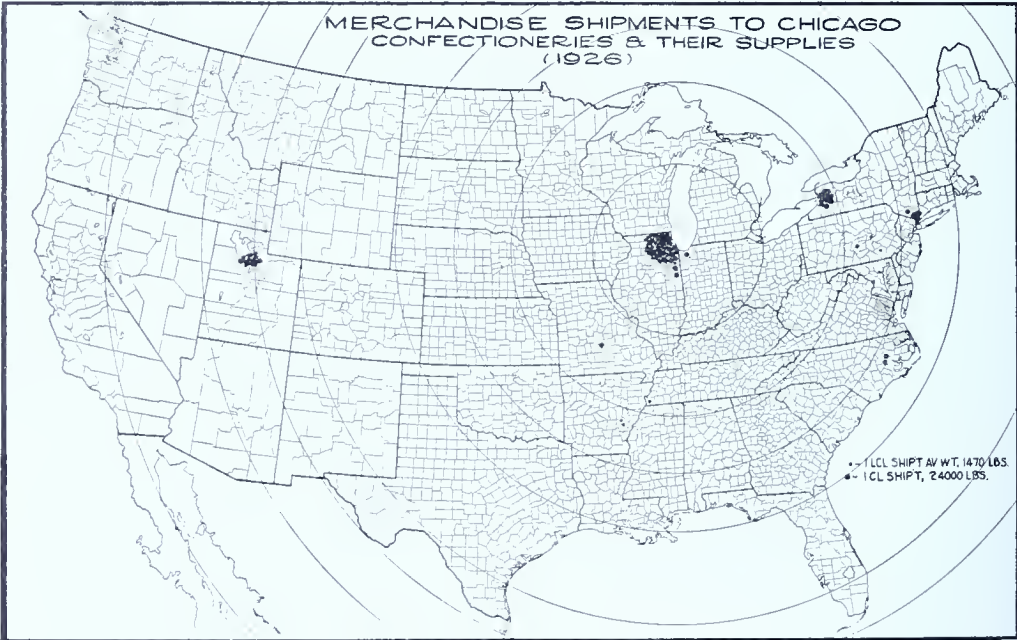


FIG. 8

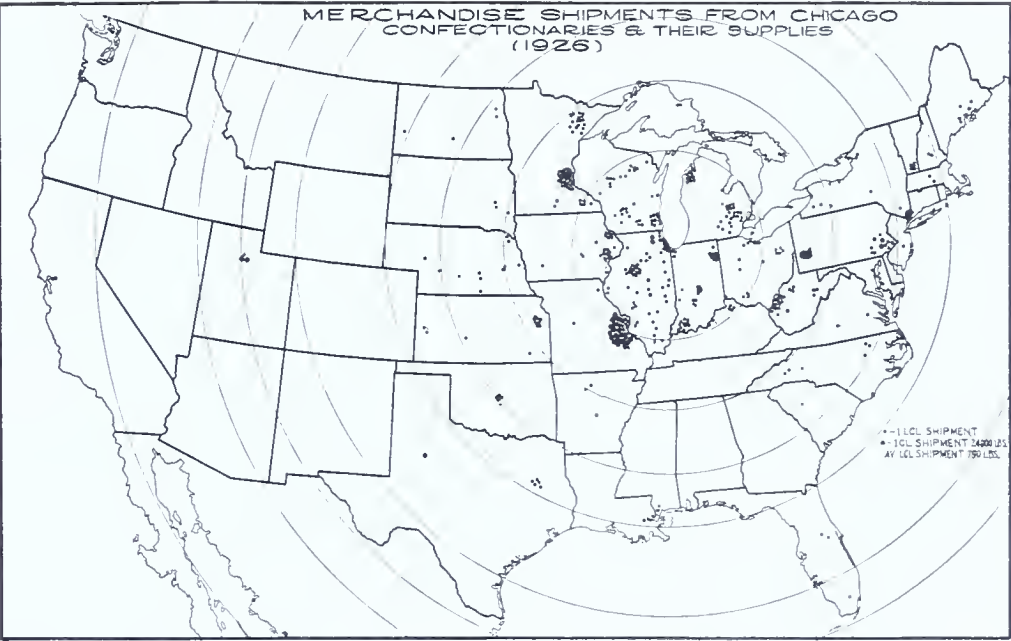


FIG. 9

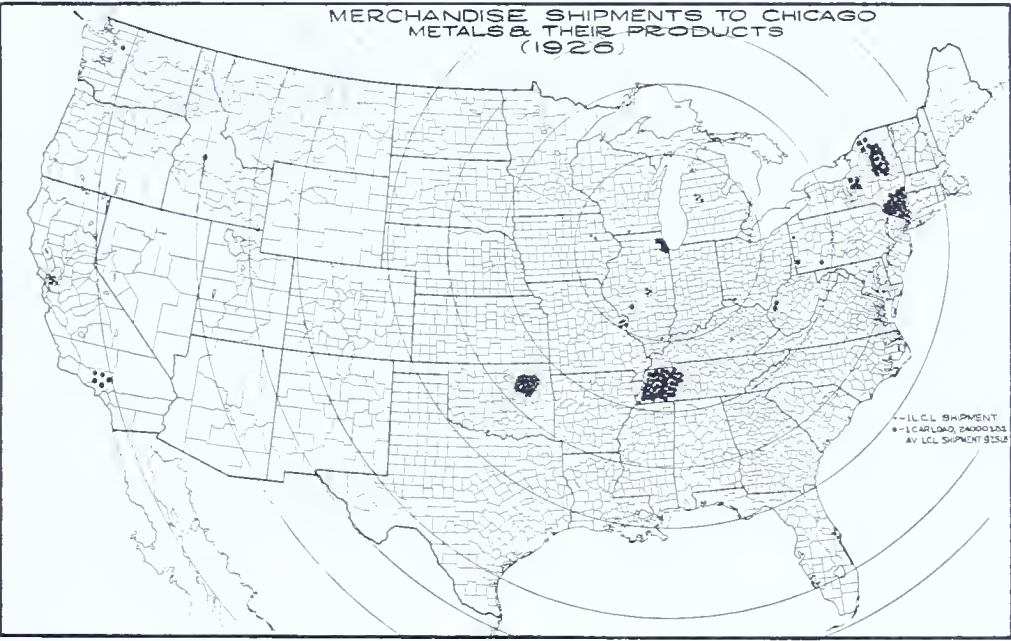


FIG. 10

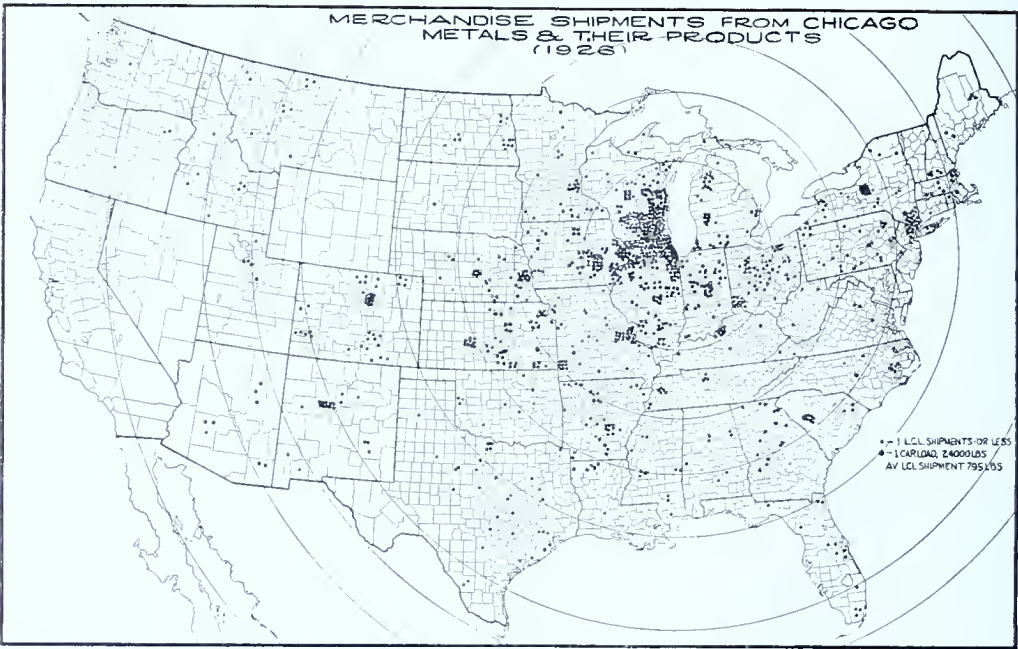


FIG. 11

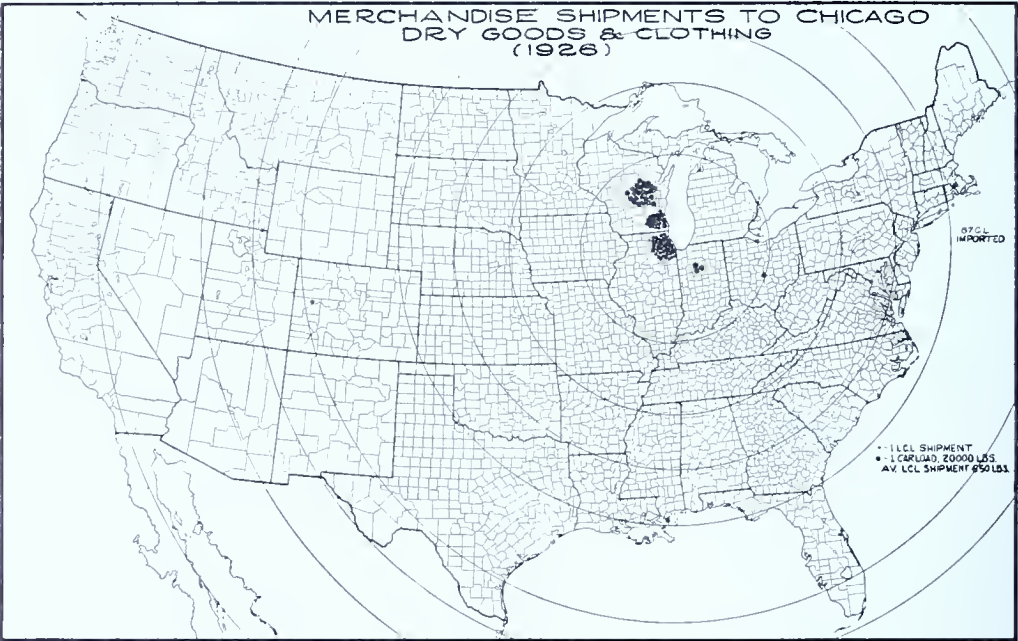


FIG. 12

cago warehouses. Surplus production resulting from iron and steel manufacture within the Chicago area gives impetus to such wide dispersion.

Figures 12 and 13 show the concentration of dry goods and clothing. It is noted that the bulk of concentration is from the states of Illinois, Indiana, and Wisconsin. Some silk goods are drawn from New Jersey and eighty-seven carloads of imported

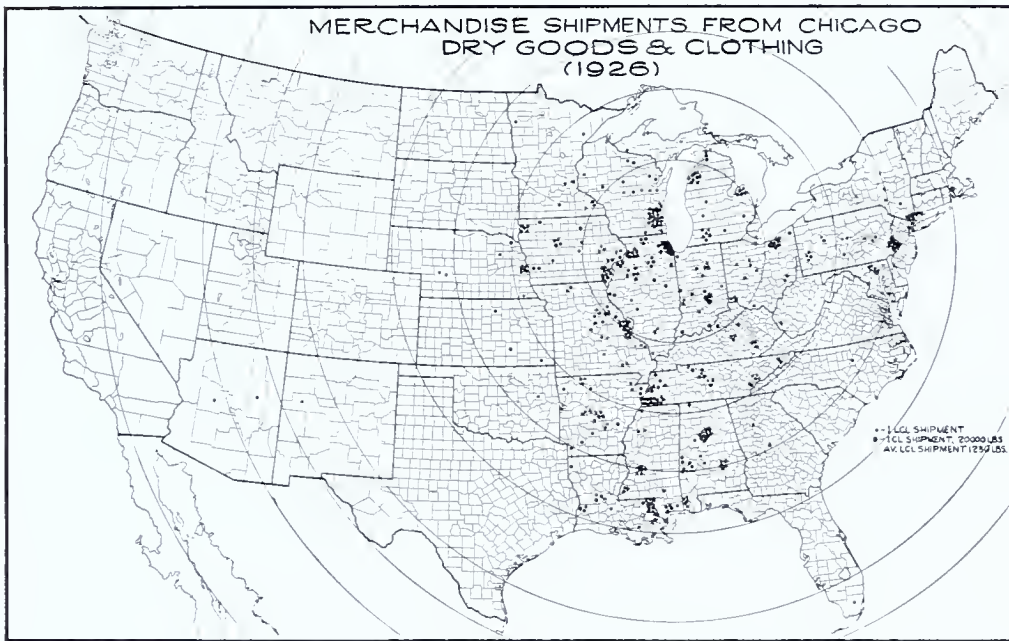


FIG. 13

goods in bond from the east coast. The dispersion of dry goods and clothing follows the Mississippi Valley southward. There is a heavy shipment of burlap and gunny cloth to these sections, especially in the more southern regions where such material is used in the baling of cotton. The distribution to the midwestern states, especially to the west of the Mississippi, is accounted for in substantial amount by binder-twine shipments to grain-growing areas.

CONCLUSIONS

The supply area for all commodities entering Chicago public merchandise warehouses shows heaviest shipments from within

550 miles of Chicago. There is heavier concentration from the east of this area than from the west of it. The heaviest dispersion from Chicago warehouses takes place within an area of 750 miles from the city, with almost equal dispersion to the east and west of the area so determined.

The great preponderance of shipments from Chicago warehouses is of the less-than-carload variety, whereas a very large portion of the inbound shipments are carlot in nature. These facts indicate the nature of the transportation function being rendered by the public merchandise warehouse.

The distribution and supply areas of a city's merchandise warehouses are largely dependent upon the proximity of the city to the production areas of the commodities involved, its tie-up with the national transportation system, and the local consumption of the commodities handled.

The supply and distribution areas of Chicago public merchandise warehouses cannot be designated as exclusive areas for Chicago. For in so far as freight rates influence the terminal-market warehousing area, the net saving is the important consideration. The time element may be more favorable to one distributing center than to another which has a slight advantage in freight rates. Some producers may be located so favorably with regard to production costs that a high freight-rate expenditure can be absorbed out of profits. Freight-rate differentials may be so constructed as to allow several distributing centers to compete within the same areas.